

WHAT IS CLAIMED IS:

1. A semiconductor photodetector comprising a semiconductor substrate formed with a plurality of pn junction type photodiodes on a side opposite from an incident surface for light to be detected;

wherein a pn junction region is formed between photodiodes adjacent each other in the plurality of photodiodes on the side opposite from the incident surface of the semiconductor substrate.

2. A semiconductor photodetector according to claim 1, wherein the pn junction region is formed so as to surround the photodiode as seen from the opposite side.

3. A semiconductor photodetector according to claim 1, wherein a high-concentration impurity semiconductor region having the same conductive type as that of the semiconductor substrate is formed between the pn junction region and the photodiode on the opposite side of the semiconductor substrate.

4. A semiconductor photodetector according to claim 3, wherein the high-concentration impurity semiconductor region is formed so as to surround the photodiode as seen from the opposite side.

5. A semiconductor photodetector according to claim 4, wherein an electrode electrically connected to the pn junction region and high-concentration impurity

semiconductor region is formed on the opposite side of the semiconductor substrate; and

wherein the electrode is connected to a ground potential.

5 6. A semiconductor photodetector according to claim 4, wherein a first electrode electrically connected to the pn junction region and a second electrode electrically connected to the high-concentration impurity semiconductor region are formed
10 on the opposite side of the semiconductor substrate;

wherein the first and second electrodes are connected to respective ground potentials while being electrically insulated from each other.

15 7. A semiconductor photodetector according to claim 1, wherein the semiconductor substrate is of a first conductive type; and wherein the plurality of photodiodes and pn junction region are constituted by a second conductive type impurity semiconductor region and the semiconductor substrate.

20 8. A semiconductor photodetector according to claim 3, wherein the semiconductor substrate and high-concentration impurity semiconductor region are of a first conductive type; and wherein the plurality of photodiodes and pn junction region are constituted by a
25 second conductive type impurity semiconductor region and the semiconductor substrate.

9. A semiconductor photodetector according to claim 1, wherein the opposite side of the semiconductor substrate is formed with respective electrodes, each including a bump electrode, electrically connected to the plurality of photodiodes;

the semiconductor photodetector further comprising a support member formed with respective electrode pads, formed on a side facing the semiconductor substrate, corresponding to the plurality of photodiodes; the plurality of photodiodes being electrically connected to the electrode pads corresponding thereto in the support member by way of the respective bump electrode.

10. A radiation detecting apparatus comprising the semiconductor photodetector according to claim 1; and

a scintillator, positioned on the incident surface side of the semiconductor substrate, emitting light in response to a radiation incident thereon.